

Exhibit 5

Expert Report of Michael Barber, PhD

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majority BVAP districts that Mr. Fairfax draws in his illustrative map. However, the comparison of compactness between Illustrative SD-2 and Enacted SD-2 is inappropriate because the legislature had no discretion over the boundaries of Senate District 2 once the county groupings were determined. And it just so happens that the county grouping that makes up SD-2 is especially non-compact. In essence the legislature was drawing with one hand tied behind their back with respect to compactness here. However, Mr. Fairfax drew his illustrative Senate District 2 without regard for the county groupings and his Illustrative District 2 traverses three different county groupings.²⁹ It is therefore not surprising that his Illustrative SD-2 is more geographically compact than the 2023 Enacted SD-2, nor is it a good indication of whether or not the illustrative map satisfies the *Gingles* 1 compactness precondition.

Furthermore, the lack of discretion afforded the legislature due to the county groupings fixing many of the district boundaries makes it all the more notable that the other majority BVAP district that Mr. Fairfax draws, illustrative SD-5 (Plan A), is less compact than the Enacted Map's SD-5 (See. Fairfax Report, pg. 60). Mr. Fairfax drew Illustrative Senate District 5 (Map A) without following the county cluster boundaries, while the Enacted SD-5 was entirely determined by the arrangement of the county clusters. In other words, even though Mr. Fairfax had greater flexibility to determine the district boundaries, his illustrative SD-5 is less compact than the comparable district in the Enacted Plan, which was entirely pre-determined by the county clusters and was not "drawn" by the legislature in the conventional sense.

6.2 Illustrative Senate Maps Violate the *Stephenson* Criteria

As noted above, a unique feature of North Carolina's redistricting process for state legislative districts is that the state is first divided into "county groupings" of contiguous counties that entirely contain a set number of legislative districts. These groupings are

²⁹This is true regardless of whether one looks at the Senate Cluster arrangement D1 or D2. See: <https://sites.duke.edu/quantifyinggerrymandering/files/2021/08/countyClusters2020.pdf>

determined by the population of the counties and not the legislature.³⁰ Only after the groupings are determined does the legislature begin the line drawing process within each grouping. In essence, the redistricting process is a multi-step process. First, the county groupings are assigned and those groupings that contain only one district are determined outside of the legislature's control. After that, the legislature draws district boundaries within each grouping — in essence completing a series of smaller “mini-redistrictings” within each grouping. Finally, within each county grouping, the legislature is further constrained by the *Stephenson* criteria because within the clusters that contain multiple districts, districts can traverse county lines one time at most.

Mr. Fairfax's illustrative Senate Maps do not adhere to the *Stephenson* criteria in two ways. First, many of the districts in the illustrative map do not follow the county clusters.

Figure 21 shows districts in the Illustrative Senate Maps that break the county grouping boundaries. Importantly, by adding the additional majority BVAP districts (2 in Illustrative Map A, 1 in Illustrative Map B), there is a spillover effect that implicates many other districts across the eastern third of the state. In Illustrative Senate Map A, 6 county clusters composing 6 districts (12% of Senate Districts) are divided. This impacts 1,240,506 people, constituting 11.9% of the state's population, who are assigned into districts that do not adhere to the county clusters. In Illustrative Senate Map B, which contains only 1 additional majority BVAP district, the creation of this district has the downstream effect of impacting 5 Senate districts (10% of Senate Districts) constituting 9.57% of the state's population who are drawn into districts that do not adhere to the county cluster boundaries.

³⁰In some cases there are multiple options for county groupings, at which point the legislature can choose between grouping options.

6.4.1 Illustrative Senate Map A

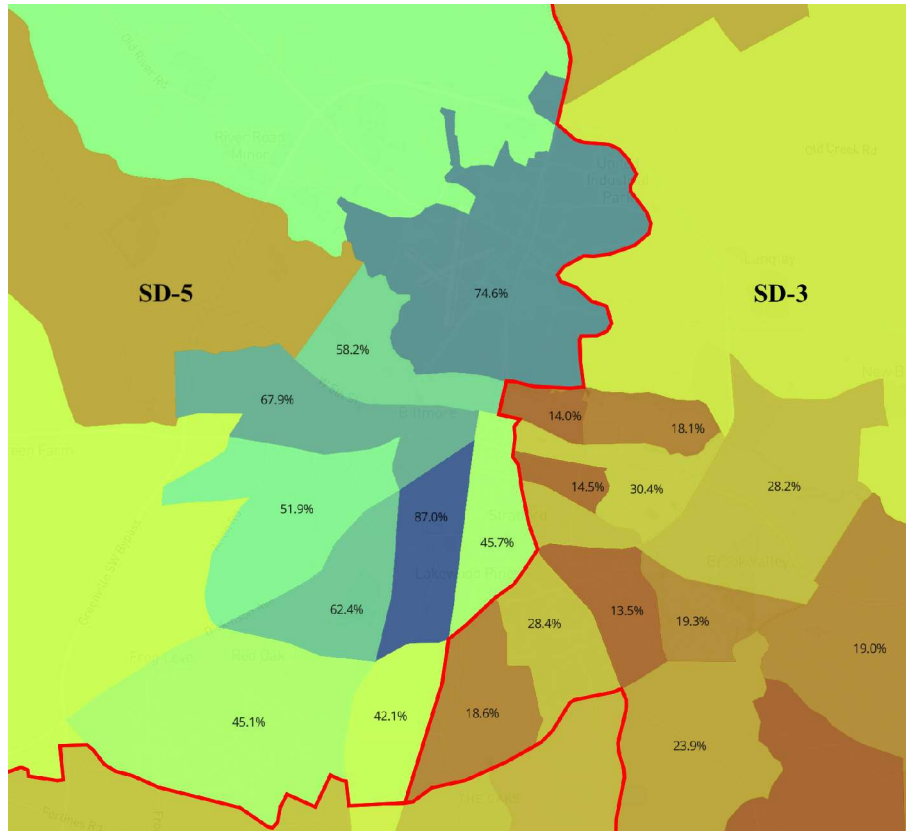
The first *Gingles* precondition states that for a Section 2 claim, minority voters must be sufficiently large and geographically compact to form the majority of a single member district. Furthermore, Justice Kagan, writing for the Court in *Cooper v. Harris* stated that such a single member district should be “reasonably configured.” Chief Justice Roberts, writing for the majority in *Allen v. Milligan* states that a “reasonably configured” district is one that “comports with traditional districting criteria” (at pg. 10). Therefore, it is easy to imagine that a reasonably configured district would be one that closely adheres to a state’s criteria governing the drawing of legislative district boundaries.

Illustrative Senate District 2, shown in Figure 27, is located in the northeastern region of the state and is composed of nine counties (Vance, Warren, Halifax, Northampton, Hertford, Gates, Chowan, Bertie, and Washington). While the district is composed of whole counties, it divides three different senate county clusters, which are shown with solid blue lines in the figure. As noted above, this has the spillover effect of pushing other districts out of the county clusters, with a total impact of six county clusters being divided by six senate districts. Illustrative SD-2 is underpopulated by 3.26% and has a BVAP of 50.25%.

The district has a Reock compactness score of .31 and a Polsby-Popper compactness score of .26. Mr. Fairfax notes that these scores are higher than the *least* compact districts in the Illustrative Map and the Enacted Map. However, the comparison to the least compact districts sets a pretty low bar, ensuring only that the district is not the least compact. However, it is the case that SD-2 in the Illustrative Map is less compact than the average district in Illustrative Map A (average Reock score of 0.40 and average Polsby-Popper score of 0.31) and the Enacted Map (average Reock score of 0.40 and average Polsby-Popper score of 0.31).³³

³³See Fairfax Report, pg 60 for compactness scores.

Figure 29: Division of Greenville by Illustrative Map A SD-5 and SD-3



Boundary between Illustrative Senate District 5 and 3 in Greenville. The red line shows the Senate district boundary. Precincts are shaded and labelled by their Black Voting Age Population percentage. Map source: <https://davesredistricting.org/>

6.4.2 Illustrative Senate Map B

Illustrative SD-2 in Map B is identical in shape to SD-2 in Illustrative Map A. In Illustrative Senate Map B SD-5 is no longer a majority BVAP district and retains the same orientation as in the Enacted Map.

plications for the criticisms Mr. Fairfax offers. First, it is important to note that the area in which Mr. Fairfax’s illustrative House maps (both A and B) differ from the 2023 Enacted Map overlap significantly with county clusters where the legislature has no discretion over the district boundaries, since this region of the state is composed of many single-district clusters.³⁷ Of the nine county groupings in the region affected by Mr. Fairfax’s Illustrative Maps, four of them are single-district clusters.

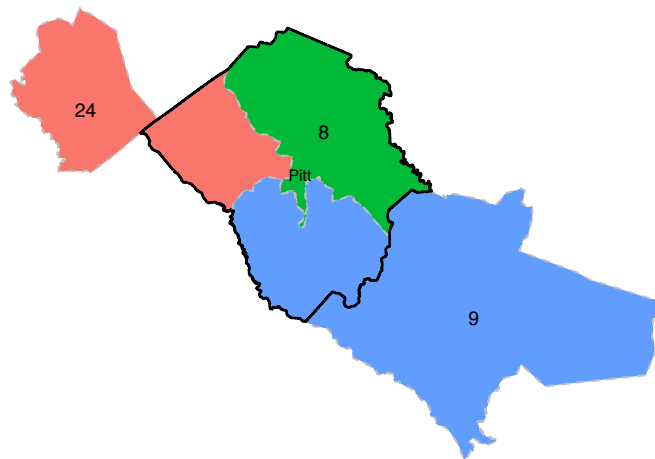
The second important implication of the county grouping rule is that many of the groupings are not especially geographically compact. This can be seen in the map above where several of the groupings are long and narrow or oddly shaped (e.g. HD-5 in the Enacted Map that is composed of Hertford, Gates, Pasquotank, and Camden Counties or HD-12 in the Enacted Map that is made up of Greene, Lenoir, and Jones Counties). This is important because Mr. Fairfax draws attention to the compactness of the Enacted Map and compares it to the compactness of his illustrative maps as evidence that his illustrative maps satisfy the first *Gingles* precondition. For example, Mr. Fairfax, regarding the six additional majority BVAP districts in Illustrative House Map A, states “four of the six districts perform better than the House Enacted Plan’s corresponding district using Reock [a measure of compactness]. For Polsby-Popper [a different measure of compactness], the House Enacted Plan performs better in four of the six corresponding districts.” (Fairfax Report, pg. 44).

However, the comparison of compactness between the Illustrative House Districts and those in the Enacted Map is inappropriate because the legislature had no discretion over the boundaries of several of these districts once the county groupings were determined. And it just so happens that the county grouping that makes up these districts are not especially compact. In essence the legislature was drawing with one hand tied behind their back with respect to compactness. However, Mr. Fairfax drew his illustrative House Districts

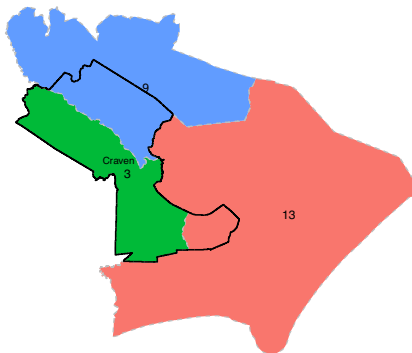
³⁷It is true that the legislature had discretion as to which grouping to select of two options, but once that choice is made, the boundaries of each district are fixed and follow the county grouping boundary. However, Mr. Fairfax’s illustrative maps are not simply different choices of possible county clusters but instead cross county clusters regardless of the choice of which cluster arrangement to use.

Figure 32: Pitt and Craven Counties Divided across Three Districts in Illustrative House Maps

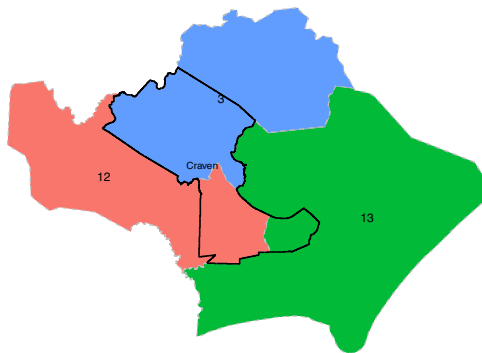
Illustrative A House Map:
House Districts 8, 9, and 24 split Pitt County 3 ways



Illustrative A House Map:
House Districts 3, 9, and 13 split Craven County 3 ways

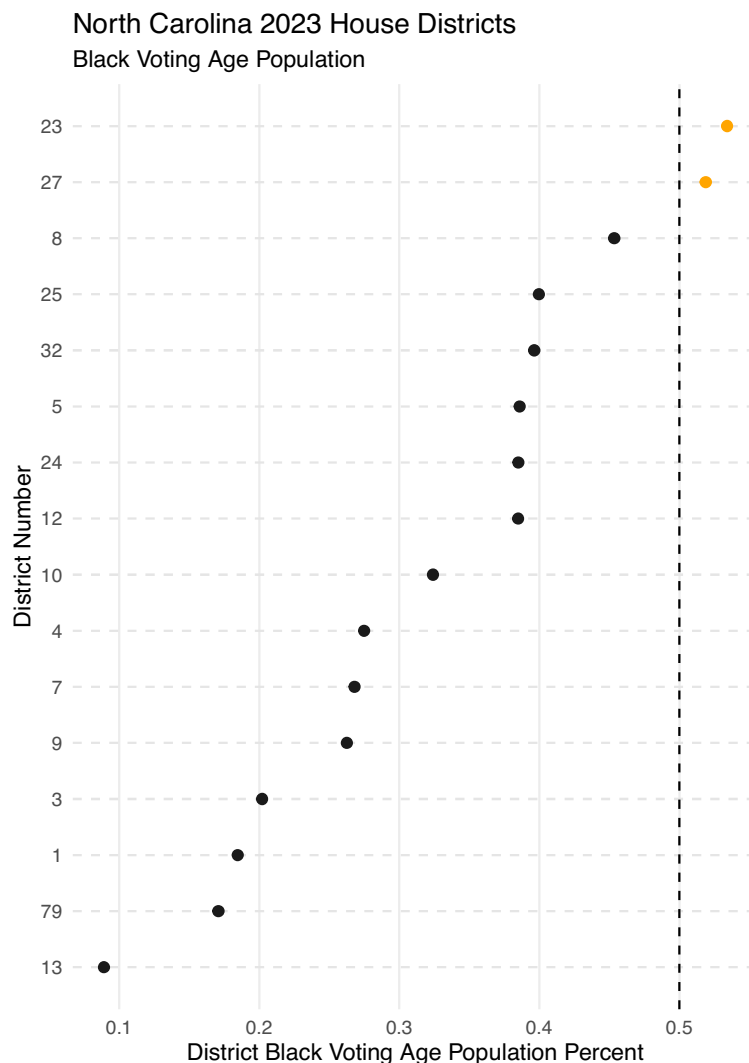


Illustrative B House Map:
House Districts 3, 9, and 13 split Craven County 3 ways



single-district clusters where the legislature had no discretion over the district boundaries.⁴⁰

Figure 35: BVAP of House Districts in Enacted Map



Note: Black Voting Age Population Percent of Enacted House districts in eastern North Carolina. Majority BVAP districts are colored in orange.

The Illustrative Maps (both A and B) add an additional four majority BVAP districts in this region of the state, for a total of six majority BVAP districts of the 16 districts in this region (37.5% of the total districts in this area). Figure 36 shows the BVAP of each of the 16 districts in this region of the state for Illustrative House Map A (left panel) and Illustrative

⁴⁰There are other majority BVAP districts in all of the maps — HD-107 in Mecklenburg County and HD-58 in Guilford County, but these are unaltered in the Illustrative Maps and are located in areas outside the eastern third of the state.

Dated: September 26, 2024

Michael Barber

Signed: 